Part 6: Safety and Security

Overview

The safety and security of the traveling public are top priorities for the Wichita Area Metropolitan Planning Organization (WAMPO), Wichita Transit, Kansas Department of Transportation (KDOT), Federal Highway Administration (FHWA), Federal Transit Administration (FTA), and the cities and counties in the planning area. This chapter addresses these issues and recommends actions for improving traveler safety and security.

The Safety portion of the LRTP will focus on motor vehicle traffic accidents and methods to establish a process to reduce the occurrence and severity of these accidents. Approximately one out of every seven motor vehicle accidents that occur in Kansas, occur in the WAMPO region.

In addition, since September 11, 2001, the need for public security has gained importance. Technologies are available to improve the security of the region's transportation system. This aspect will be addressed in the Security section of this chapter.

Safety

The starting point for improving the safety of the traveling public is good data. KDOT is responsible for compiling the data for traffic accidents that occur on public roadways involving property damage of at least $500 or an injury or fatality (Figure 3.6-1). This data is most useful if it can be tied to a location reference system. Such a system is available for accidents that occur on the state highway system but is not currently available for other roads.

The data is analyzed by identifying accident locations, types, and appropriate countermeasures. Countermeasures should consider engineering, education, and enforcement efforts that can reduce the identified types of accidents.

The final step is the development of a safety improvement program that addresses the types of accidents occurring within the planning area.

Motor Vehicle Accident Data

Each year approximately 11,000 motor vehicle accidents occur in the WAMPO Planning Area. This means that one in seven accidents that occur in Kansas take place in the WAMPO region. Accident data has been summarized in this section by: numbers and severity; general locations where they occurred; collision type; and, top 20 contributing circumstances. Figure 3.6-1 shows the total accidents that occurred during a five-year period in rural Sedgwick County, Wichita, and the metropolitan cities.

Accident Locations

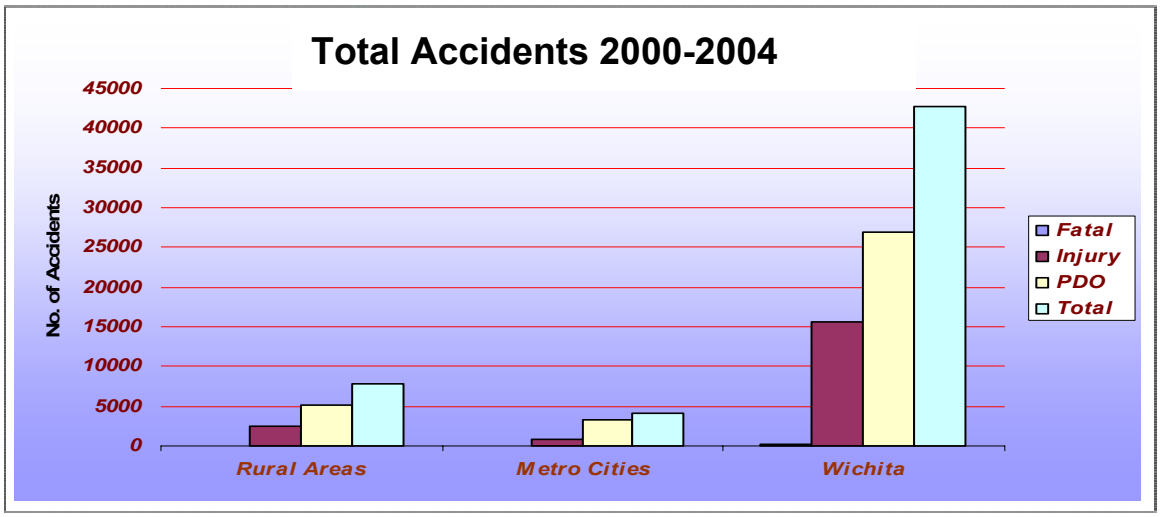


Figure 3.6-1: Accident Locations (source KDOT)

During the five-year period from 2000-2004, 224 fatal accidents, 18,957 injury accidents, and 32,255 property damage only accidents occurred within the planning area (Table 3.6-1). As expected, the majority of the total accidents, fatalities, and injuries occur in the City of Wichita or in rural Sedgwick County where the highest percentage of travel occurs. While there is some variation, accidents numbers remain fairly consistent over the five-year period.

Motor Vehicle Accident Numbers and Severity

	Total Accidents in the Year:					2000-2004 Accidents			
City	**2000**	**2001**	**2002**	**2003**	**2004**	**Total**	**Fatal**	**Injury**	**PDO**
Rural Areas	1520	1534	1650	1482	1551	7737	97	2453	5187
Andale	0	1	1	1	0	3	0	0	3
Andover	148	145	125	121	135	674	0	174	500
Bel Aire	0	0	0	29	41	70	0	12	58
Bentley	1	4	3	2	0	10	0	3	7
Cheney	6	2	4	5	3	20	0	4	16
Clearwater	9	11	5	6	12	43	0	7	36
Colwich	0	9	3	4	5	21	0	4	17
Derby	246	282	308	251	326	1413	1	254	1158
Eastborough	16	28	24	18	13	99	0	21	78
Garden Plain	1	0	0	3	3	7	0	1	6
Goddard	31	14	15	17	19	96	1	28	67
Haysville	74	82	80	55	40	331	0	62	269
Kechi	4	7	5	4	5	25	0	7	18
Maize	5	6	3	10	21	45	0	12	33
Mount Hope	2	0	2	0	1	5	1	1	3
Mulvane	66	54	48	45	63	276	0	41	235
Park City	123	100	129	127	186	665	1	146	518
Valley Center	59	45	38	41	47	230	1	52	177
Viola	2	0	1	0	0	3	0	1	2
Wichita	7969	9087	9539	7982	8086	42663	122	15,674	26,867
Total	**10282**	**11411**	**11983**	**10203**	**10557**	**54436**	**224**	**18,957**	**32,255**

Table 3.6-1: Motor Vehicle Accidents by Urban & Rural Areas (source: KDOT)

The general locations on the roadway where accidents occur vary for rural and urban areas (Table 3.6-2). In rural Sedgwick County the majority of accidents take place at non-intersection locations. The reverse is true for the cities in the metropolitan area where the most accidents occur at intersections or are intersection/driveway-related. Therefore countermeasures for accident reduction will differ based upon the rural or urban nature of the area.

General Locations of Motor Vehicle Accidents

	Accidents				People	
Collision Location	**Total**	**Fatal**	**Injury**	**PDO**	**Deaths**	**Injuries**
Rural Sedgwick County Accidents						
Non-Intersection	4,153	43	1,133	2,977	47	1,603
Intersection	1,497	37	657	803	39	1,280
Intersection-Related	993	4	283	706	4	422
Parking Lot or Driveway Access	363	3	107	253	3	185
Interchange Area	255	3	69	183	3	103
On Crossover	4	0	2	2	0	4
Roadside (including shoulder)	402	7	177	218	9	238
Median	65	0	24	41	0	28
Parking Lot or Rest Area Trafficway	1	0	0	1	0	0
Unknown	4	0	1	3	0	1
Sub Total	**7,737**	**97**	**2,453**	**5,187**	**105**	**3,864**
Metropolitan Area City* Accidents						
Non-Intersection	12,748	54	3,839	8,855	58	5,283
Intersection	15,005	28	6,214	8,763	28	9,781
Intersection-Related	7,902	11	2,869	5,022	11	4,045
Parking Lot or Driveway Access	6,325	6	2,047	4,272	7	2,935
Interchange Area	3,142	10	986	2,146	10	1,393
On Crossover*	19	2	10	7	2	20
Roadside (including shoulder)	1,350	14	477	859	16	604
Median	192	2	61	129	2	80
Parking Lot or Rest Area Trafficway	5	0	1	4	0	1
Other	2	0	0	2	0	0
Unknown	9	0	0	9	0	0
Sub Total	**46,699**	**127**	**16,504**	**30,068**	**134**	**24,142**
TOTAL	**54,436**	**224**	**18,957**	**35,255**	**239**	**28,006**

Table 3.6-2: Accident Locations (source KDOT)

* All cities within Sedgwick County plus Andover and Mulvane.

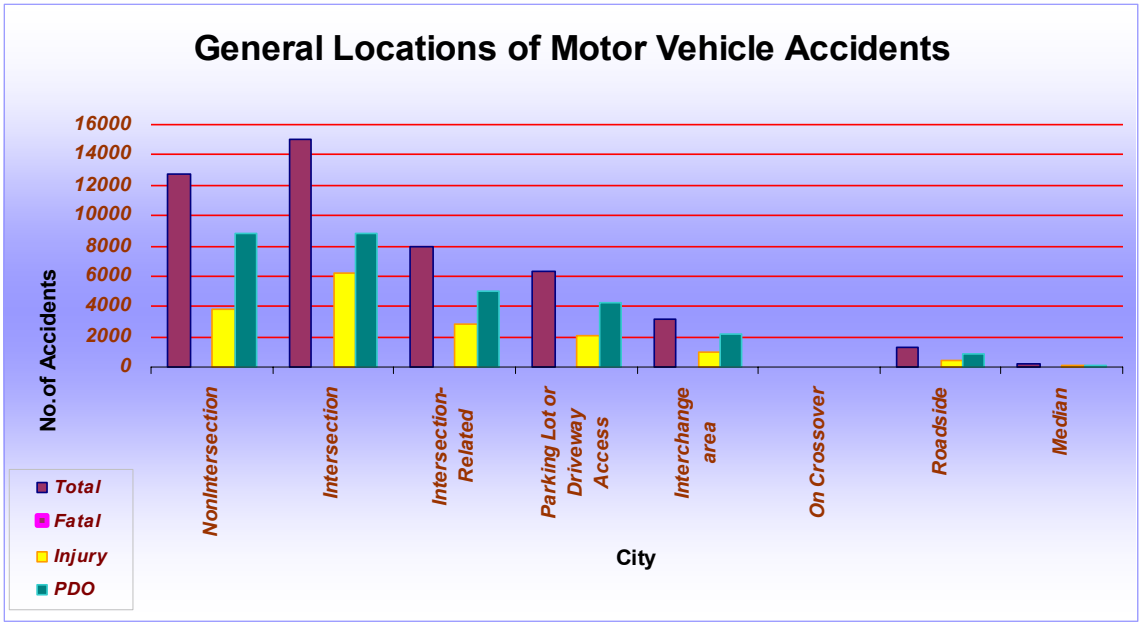
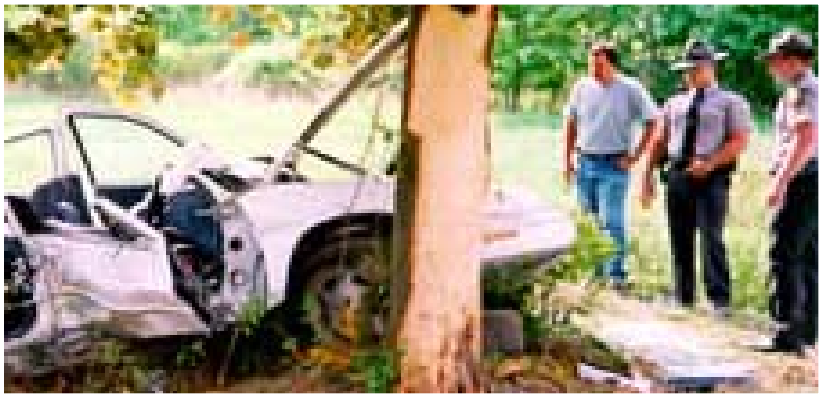


Figure 3.6-2: General Accident Locations

Collision types also vary by rural or urban area (Table 3.6-3). In rural Sedgwick County the leading type of accident is a collision with a fixed object or other object/animal on or alongside the roadway. Within the region's cities, the leading accident types are angle and rear end collisions with another vehicle, primarily at intersections.



Motor Vehicle Collision Types

	Accidents				People	
Collision Type	**Total**	**Fatal**	**Injury**	**PDO**	**Deaths**	**Injuries**
Rural Sedgwick County Accidents						
Other Non-Collision	156	0	11	145	0	13
Overturned	343	6	220	117	6	312
Pedestrian	24	7	17	0	7	19
Other Vehicle - Head On	98	13	60	25	14	144
Other Vehicle - Rear End	1,591	8	496	1,087	10	768
Other Vehicle - Angle	1,536	37	650	849	39	1,289
Other Vehicle - Side Swipe Opposing	109	2	24	83	2	45
Other Veh. - Side Swipe Overtaking	304	1	50	253	1	81
Other Vehicle - Backed Into	52	0	5	47	0	9
Other Vehicle - Other	56	0	2	54	0	2
Other Vehicle - Unknown	11	0	1	10	66	2,339
Parked Vehicle	108	0	17	91	0	26
Railway Train	15	2	7	6	2	8
Pedalcycle	10	0	10	0	0	12
Animal	1,420	0	79	1,341	0	93
Fixed Object	1,845	21	802	1,022	24	1,038
Other Object	59	0	2	57	0	4
TOTAL	**7,737**	**97**	**2,453**	**5,187**	**105**	**3,864**
Metropolitan Area City* Accidents						
Other Non-Collision	310	6	99	205	7	116
Overturned	373	4	268	101	4	333
Pedestrian	504	12	488	4	12	515
Other Vehicle - Head On	523	2	277	244	2	464
Other Vehicle - Rear End	13392	7	4809	8576	7	7019
Other Vehicle - Angle	19660	41	7522	12097	42	11914
Other Vehicle - Side Swipe Opposing	463	0	116	347	0	172
Other Veh. - Side Swipe Overtaking	1927	3	272	1652	3	371
Other Vehicle - Backed Into	564	0	55	509	0	69
Other Vehicle - Other	160	1	15	144	1	17
Other Vehicle - Unknown	51	0	16	35	66	2315
Parked Vehicle	2356	1	290	2065	1	361
Railway Train	16	0	4	12	0	5
Pedalcycle	411	3	395	13	3	405
Animal	361	0	29	332	0	32
Fixed Object	5405	47	1814	3544	52	2286
Other Object	219	0	34	185	0	39
TOTAL	**46699**	**127**	**16503**	**30069**	**134**	**24141**

Table 3.6-3: Motor Vehicle Collision Types (Source: KDOT)

The top 20 contributing circumstances for traffic accidents in the planning area are primarily driver-related (Table 3.6-4). The top five contributing circumstances account for 76 percent of the region's accidents, they are: inattention (36% of accidents), failure to yield right of way (15%), following too close (7%), too fast for conditions (7%), and disregard traffic signs, signals, and markings (6%).

Accident Contributing Circumstances (Top 20)

Category	Contributing Circumstance (top 20)	Frequency*	% of Total
Driver	Failed to Give Full Time and Attention	30,202	36.11%
Driver	Failed to Yield Right-of-Way	12,645	15.12%
Driver	Followed Too Closely	5,960	7.13%
Driver	Too Fast for Conditions	5,570	6.66%
Driver	Disregarded Traffic Signs, Signals, Road Markings	5,401	6.46%
Driver	Under Influence of Alcohol	3,128	3.74%
Driver	Improper Lane Change	2,129	2.55%
Driver	Made Improper Turn	2,104	2.52%
Driver	Avoidance or Evasive Action	1,473	1.76%
Environment	Animal	1,407	1.68%
Driver	Exceeded Posted Speed Limit	1,047	1.25%
Driver	Improper Backing	1,009	1.21%
On Road	Icy or Slushy	951	1.14%
Driver	Wrong Side or Wrong Way	921	1.10%
Environment	Rain, Mist, or Drizzle	801	0.96%
On Road	Wet	801	0.96%
Driver	Reckless / Careless driving	687	0.82%
Driver	Distraction in or on Vehicle	643	0.77%
Driver	Did Not Comply With License Restrictions	627	0.75%

Table 3.6-4: Top 20 Contributing Circumstances

Methodology

There are two common methods of addressing accidents that occur on the region's roadways. The first identifies high accident locations where the number of accidents at a spot location (such as an intersection) is higher than would normally be expected. The other method is a system-wide approach that focuses on the predominant types of accidents along a longer section of roadway or road network.

High accident locations can be identified through the use of a database, a pin-map, a geographic information system (GIS), or in some cases by information received from the public. Locations can be prioritized based upon accident

numbers, accident rates, or severity. Cities in the planning area participate in the KDOT's safety improvement program that addresses high accident locations.

The American Association of State Highway and Transportation Officials (AASHTO) has initiated a nationwide campaign to reduce the number and severity of crashes by focusing on the predominant types of accidents that happen in each region. AASHTO's initiative focuses on a system approach that develops cost-effective countermeasures that can be used on longer sections of roadway rather than spot locations.

Recommendations

Traffic safety impacts all of the region's residents and visitors. WAMPO should work with KDOT to conduct a thorough study of motor traffic accidents that occur in the region. This will require a much more detailed look at the accident data that is available. Efforts should be made to tie the non-highway accident locations to a reference or GIS system to help with this analysis. This study should follow AASHTO's initiative and focus on the predominant types of accidents that occur in the region. Cost-effective countermeasures should be identified that can be implemented on a system basis to reduce accident numbers and severity.

Security

Following September 11, 2001 and more recent events, security of our nation's transportation system has become an important issue. The focus of transportation officials has been to determine ways where technology can assist in making transportation systems more secure.

ITS and Homeland Security

The use of Intelligent Transportation Systems (ITS) to assist with Homeland Security functions is becoming an ever-increasing demand on systems that were once meant for transportation purposes only. ITS, due to its nature, can assist greatly with necessary Homeland Security functions. The use of cameras along critical transportation infrastructure can identify security threats to that infrastructure. Critical bridges, communication infrastructure, rivers and ports, industrial areas, and mass transit systems should be monitored through the use of Closed-Circuit Television (CCTV) and the images transmitted back to the appropriate agency or responsible party.

The use of traveler information dissemination devices such as dynamic message signs, highway advisory radio, 511, and the media are critical in the event of a mass evacuation scenario. The need to include the transportation and ITS

community in emergency operations planning is critical and should be encouraged by all emergency responders.

In the WAMPO region, there are critical infrastructure elements that should be considered a security concern or potential target for terrorist attack. These include the I-135 viaduct, the natural gas and oil refineries, wire line and wireless communications infrastructure, the crossroads of multiple railroad lines and the associated freight carrying capacity, McConnell Air Force Base, the regional transit system, and the Onyx, Cessna, and Boeing facilities. A centralized traffic operations center in Wichita will serve a lead role in any emergency due to their coordinated communications and ITS infrastructure deployed throughout the area.

The use of ITS infrastructure and the transportation community to assist emergency service providers in preventing incidents and mitigating the effects afterwards should be considered a high priority. Involving local transportation officials in drills and mock disaster scenarios will encourage cooperation and foster better understanding of the roles everyone plays. Sharing information on the capabilities of the ITS and communications infrastructure in the Wichita area with emergency service officials should be done on a regular basis.

Recommendations

WAMPO and the region's ITS Committee should identify critical transportation infrastructure and consider ITS applications that may improve the security of the transportation system. The Committee should work with emergency service officials in planning emergency operations.

Summary

The safety and security of the transportation system should be a top priority of all transportation stakeholders. Approximately 11,000 motor vehicle accidents occur every year in the WAMPO planning area. Accidents are a major contributor to the safety of travelers, cyclists, and pedestrians. Studies which directly address these issues should be completed in the future to identify trends and areas needing further attention. WAMPO should work with KDOT and FHWA to develop a plan to reduce the number and severity of motor vehicle accidents occurring in the region.

In the security realm, Wichita and the surrounding metropolitan area need to address critical infrastructure elements that are security risks to the region. A study should be done to identify potential risks and hazardous material routes. ITS technologies have applications to improve the security of the region's transportation system. WAMPO and the ITS Committee should work with emergency service officials to share information, share facilities infrastructure, and coordinate planning activities for emergency operations.